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NOTICE TO OPERATORS

A Strategy for Produced Water

Standard oil and gas industry practice is to employ injection wells to dispose of water produced during oil extraction that is not needed for other oil and gas development purposes, such as reservoir pressure maintenance, water flood, and steam generation. Because many of these injection wells were permitted years before the enactment of the federal Safe Drinking Water Act and long before California's current drought, the injection wells were frequently placed in locations and drilled to depths most convenient and cost-effective for oil operators. The result is that many injection wells used for waste disposal today are relatively shallow. The average depth of disposal wells in the state is approximately 1,700 feet below ground surface (median depth of top perforation is 1627 feet; average depth to top perforation is 2122 feet) – a depth that now is shallower than some water supply wells.

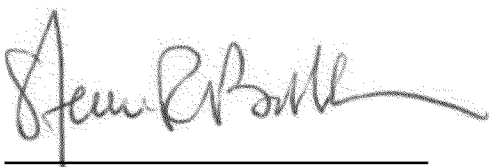
The Division of Oil, Gas and Geothermal Resources (Division) is currently rectifying long-standing issues with its permitting of disposal wells into aquifers that were not properly exempted under the Safe Drinking Water Act. Some of the operators participating in that process have been focusing on obtaining U.S. EPA aquifer exemptions for existing and planned injection wells, presumably because of the perceived cost-effectiveness and convenience inherent in maintaining current operational infrastructure. The State of California, however, sees an opportunity to rethink the standard approach to produced water disposal in light of the increasing demand for groundwater. The Division wishes to encourage operators to consider options for reuse of produced water and to take a strategic approach to location and depth of disposal wells, all of which will move California's oil and gas production practices towards a longer-term sustainable path. At the same time, we might reduce or avoid what could be a difficult, time consuming and, in some cases, unsuccessful process of proposing to increase or change the areal extent of currently exempted aquifers, or to exempt portions of new aquifers.

The State, through the Division, will pursue its policy goals of reducing the amount of disposal of produced water generally, and reducing the amount of disposal into shallow aquifers specifically, by encouraging operators to consider first, before an aquifer exemption data package is submitted to the Division, the following in priority order:

1. Treating and reusing the water for beneficial uses, such as agricultural irrigation, industrial supply, and groundwater recharge;
2. Increasing oil production via water-flood using produced water;
3. Balancing injection into reservoirs in which production is occurring to prevent fluid migration; and

4. Disposing of produced water into deeper formations containing water that is not a USDW (i.e., greater than 10,000 mg/L total dissolved solids).

Unless treatment and reuse for beneficial uses increases significantly, disposal by injection will continue to be a challenging feature of oil production in the state. Avoiding disposal into shallow aquifers wherever possible will benefit the state and the oil and gas industry by solidifying and enhancing the industry's role in the state's economic and environmental landscape.



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